JVC

SERVICE MANUAL

MODEL
MR-200L
MINI RADIO
CASSETTE RECORDER

MINI RADIO
CASSETTE RECORDER
JVC
COUNTER
MR-200L

No. 0003
Oct. 1978

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Specification

DIMENSIONS : 214mm(W) x 102mm(H) x 34mm(D)
8-7/16''(W) x 4''(H) x 1-5/16''(D)

Frequency ranges : FM 88 – 108MHz
MW 530 – 1,600kHz
LW 150 – 350kHz
Antennas : Telescopic antenna for FM
Ferrite core antenna for MW & LW
Track system : 2-track, monaural
Recording system : AC bias
Erasing system : DC erase
Cassette : Philips type cassette
Fast forward time : Within 120 sec. (C-60 cassette)
Rewind time : Within 120 sec. (C-60 cassette)
Frequency response : 300 – 8,000Hz
Wow & flutter : 0.2% WRMS
Semiconductors : 2 IC, 12 transistors
Speaker : 5.7cm
Power output : 600mW max.

WEIGHT : Approx. 800g (1.8 lbs.) with batteries

Input jacks : MIC; Sensitivity 0.3mV
Accepts a low impedance microphone. DC IN (6V)
Output jacks : EAR/REMOTE
Power supply : DC 6V (4 "AA" batteries)
AC (using the AC adaptor)
Car battery (using the car adaptor)
Battery life : Continuous recording time with the built-in microphone; approx. 2.5 hours with the super type battery UM-3DJ (size AA)

Design and specifications subject to change without notice.

Names of Parts

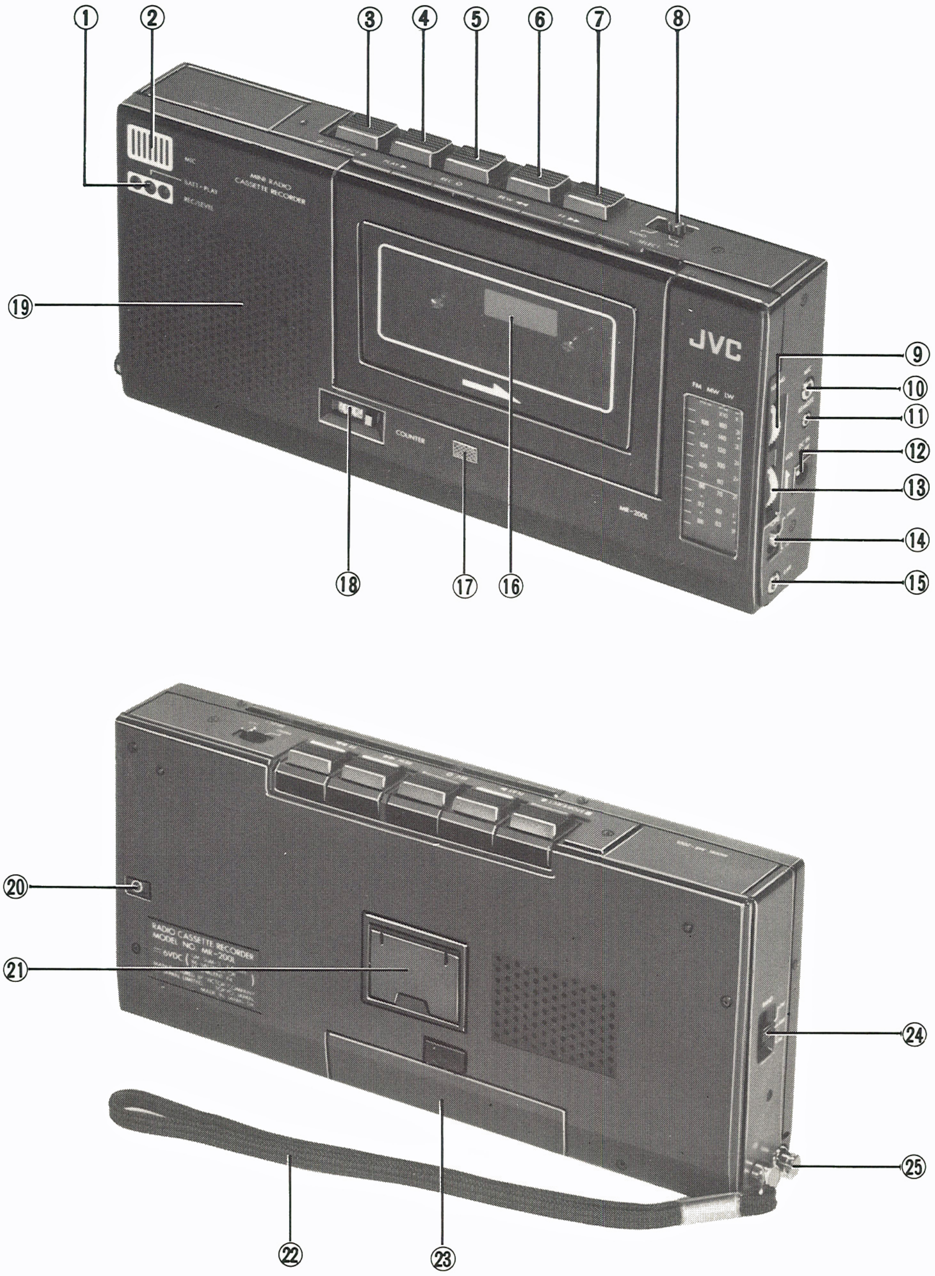


Fig. 1

1. LED indicators
   During recording, three LED's flash according to the signal level. During playback, the middle indicator functions as a battery checker. If it remains lit, the battery power is sufficient.
2. Built-in condenser microphone
3. STOP/EJECT button
4. PLAY button
5. Record button (REC)
6. Rewind button (REW/REVIEW)
7. Fast forward button (FF)
8. SELECT switch (RADIO-TAPE/RADIO OFF)
9. TUNING knob
10. External microphone jack (MIC)
11. Remote control jack (REMOTE)
12. External DC input jack (DC IN 6V)
    Connect an AC power adaptor or a car battery adaptor to operate via an external DC power supply.
13. Volume control knob (VOL)
14. TONE switch (HIGH-LOW)
15. Earphone jack (EAR)
16. Cassette compartment
17. Azimuth adjustment hole
    For use only by service personnell.
18. Tape counter
19. Speaker
20. Beat cut switch
21. Stand
22. Security strap
23. Battery compartment
24. Band selector switch (BAND-LW/MW/FM)
25. Telescopic antenna

Disassembly and Replacement

Enclosure

Parts Name	Procedure	Ref. No.	Description
Bottom panel	1. Remove battery lid and take out batteries. 2. Remove 5 screws and 2 screws.	Fig. 3 ① ②	SPSK2003M SPSK2008M
Top panel	Remove 5 screws.	Fig. 2,3 ③	SPSK2003M
Side cover	Remove 2 screws.	Fig. 2 ④ ⑤	SPSK2003M SPSK2004M
Inner-lay and cassette lid	1. Remove 4 screws and then remove the cassette lid ass'y. 2. Then put out the hinge shaft.	Fig. 4 ⑥	SPSK2002M
Inner cover	1. Remove indicator circuit board. 2. Remove 2 screws.	Fig. 4 ⑦ Fig. 4 ⑧	Refer to Electric parts. SPSP2010Z F00410-25N

Electric parts

Parts Name	Procedure	Ref. No.	Description
Amp. circuit board	Remove tuning string. 1. Remove a screw with lug and shield plate. 2. Remove 2 screws.	Fig. 5 Fig. 6 ⑨ Fig. 6 ⑩ Fig. 3 ⑨	SPSK2003M SPSK2003M SPSK2003M
Indicator circuit board	Remove 2 screws.	Fig. 4 ⑪	F00410-25N

Cassette mechanism

Parts Name	Procedure	Ref. No.	Description
Mecha. Ass'y	Remove 3 screws.	Fig. 4,7 ⑫	SPSK2004M
Motor wires	Remove two wires soldered to amp. circuit board.	Fig. 26 (wiring)	Black & Orange

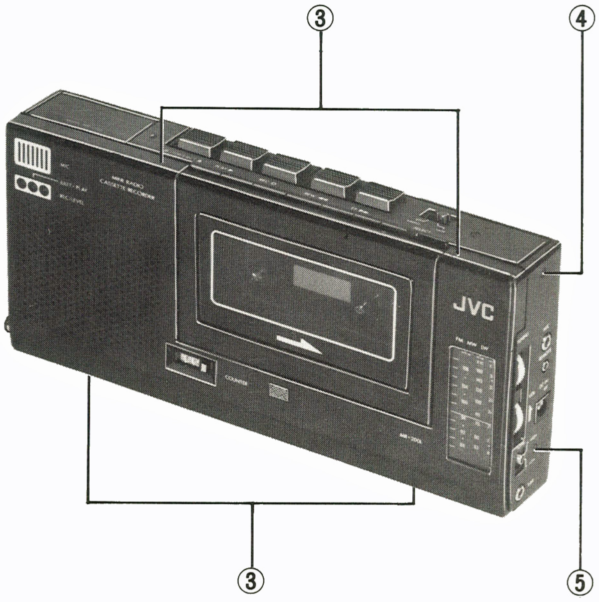


Fig. 2

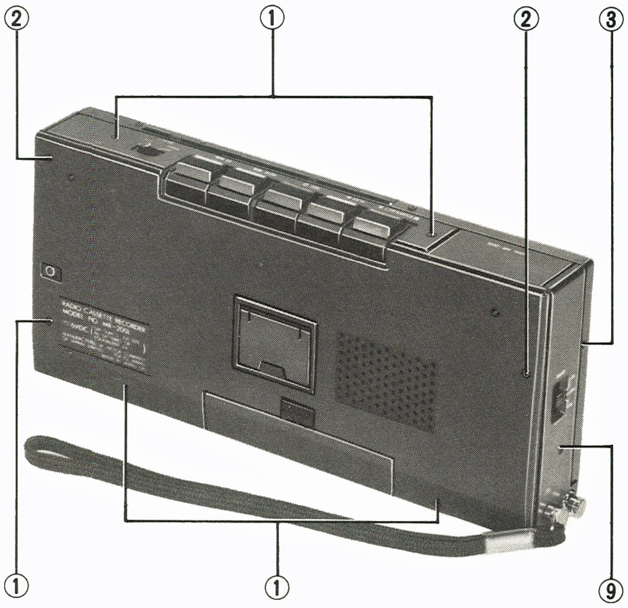


Fig. 3

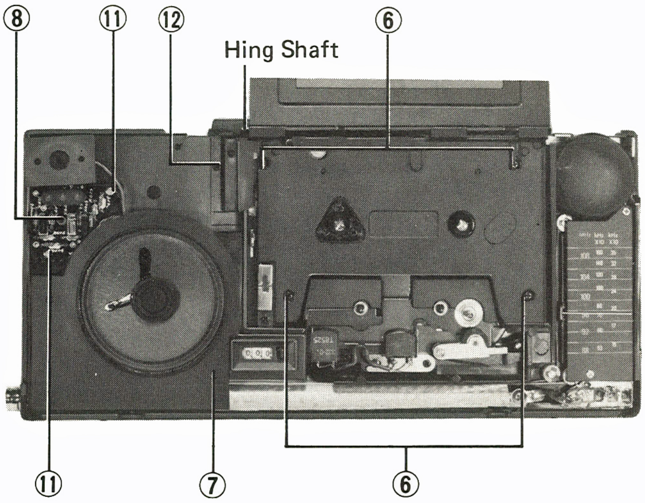

⑧
⑪
⑫
Hing Shaft
⑥
⑪
⑦
⑥

Fig. 4

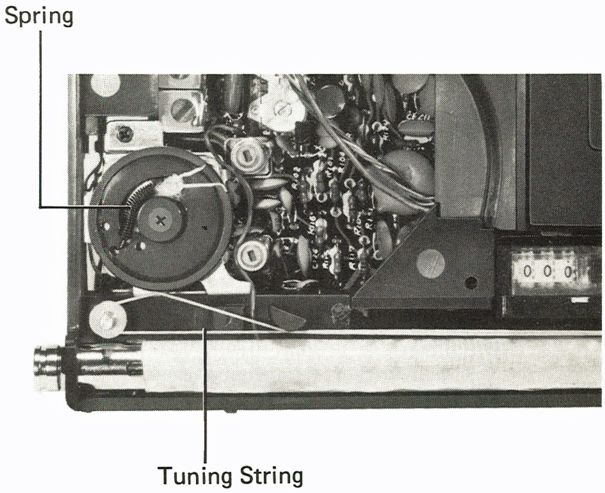

Spring
Tuning String

Fig. 5

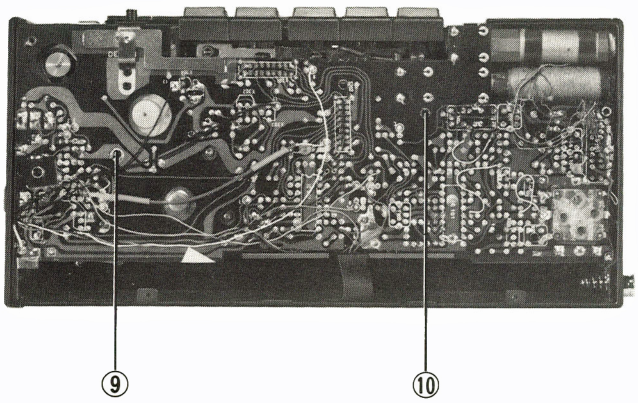


Fig. 6

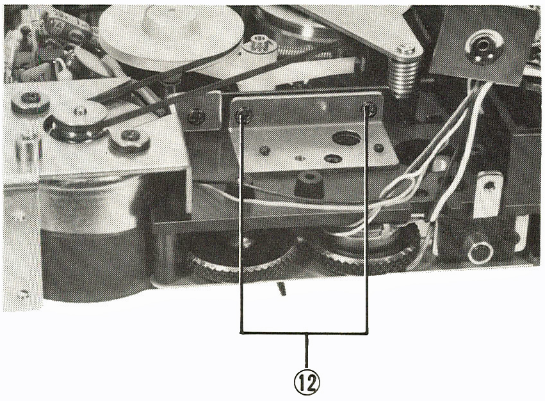


Fig. 7

Mechanical parts

Parts Name	Procedure	Ref. No.	Description
Motor ass'y	1. Remove an E ring and then remove the take-up arm ass'y 2. Remove 2 screws. (for motor) Then remove 2 screws. (for E. governor)	Fig. 8 ⑮ Fig. 8 ⑯ Fig. 9 ⑰ ⑱	REE2500 SPSK2045M SPSK2004M SPSK2016M
Flywheel ass'y and rewind arm ass'y	1. Remove a wahser on the capstan, then remove 3 screws.	Fig. 8 ⑬ ⑭ Fig. 10 ⑲	SPSK2005N SPSK2003M F28594-01
Pinch roller arm ass'y	Remove an E ring and then remove the pinch roller arm ass'y, together with pinch roller arm spring.	Fig. 10 ⑳	REE1500
Take-up arm ass'y	Remove an E ring.	Fig. 8 ⑮	REE2500
Take-up disk	Remove a disk screw.	Fig. 10 ㉑	F28457-01
FF idler ass'y	1. Remove take-up arm ass'y. 2. Remove an E ring.	Fig. 9 ㉒	REE1500

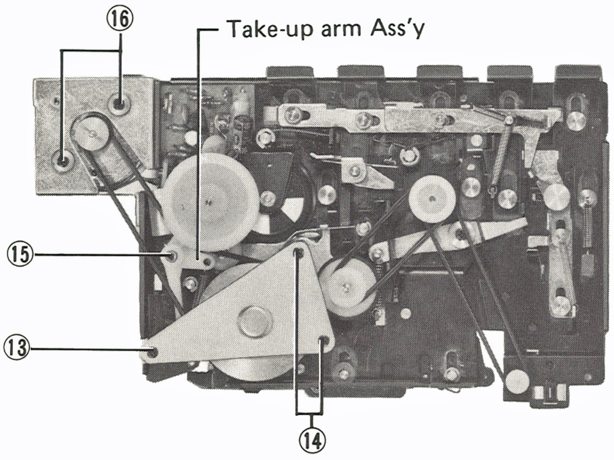


Fig. 8

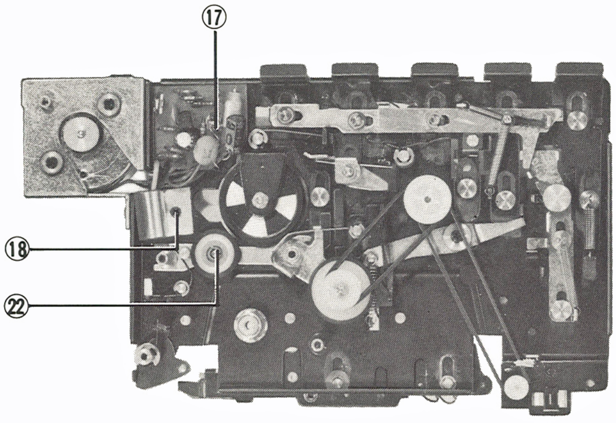


Fig. 9

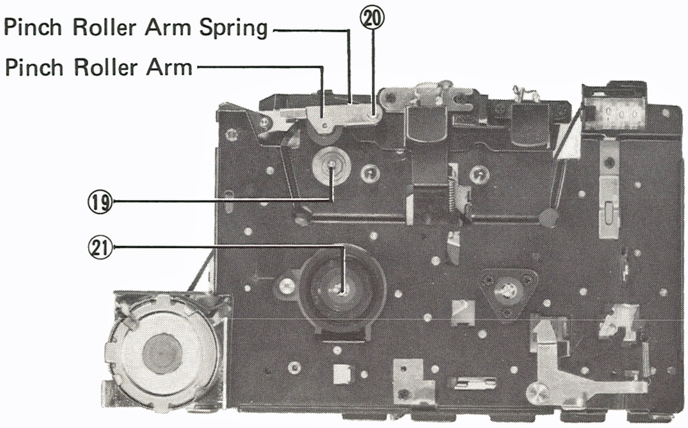


Fig. 10

Mechanical Adjustments

1. Head replacement and adjustment

Clean and demagnetize the head and guide each time the machine is serviced. If normal fidelity is not obtainable head replacement is indicated.

Head replacement

1) R/P head
   - Remove two wires soldered to head.
   - Remove two screws.
   - Then replace head.
   - Solder as shown in Fig. 11.
2) Erase head
   - Remove two wires soldered to head.
   - Remove two screws and replace head.
   - Solder as shown in Fig. 11.

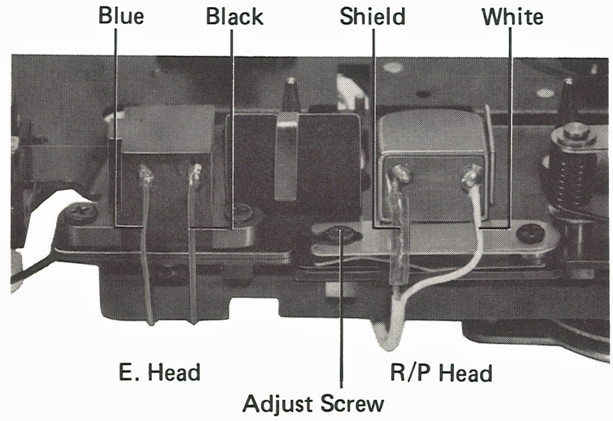


Fig. 11

Location of heads

The R/P and Erase heads should be positioned as shown in Fig. 12. Azimuth adjustment of the head should be done according to the following instructions.

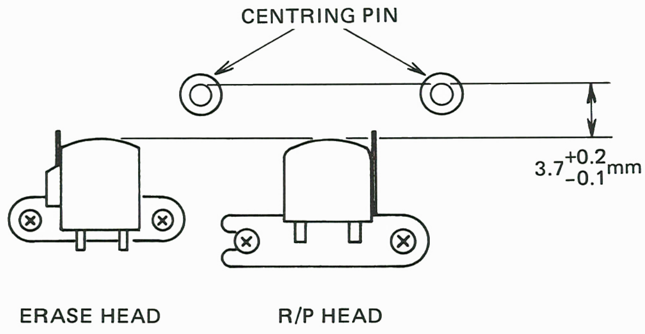


Fig. 12

Azimuth adjustment

1) Plug a cord into the earphone jack (EAR) a 8Ω resistor (corresponding to a loud speaker) in parallel with the cord.
2) Connect an oscilloscope or electronic volt meter across the terminals of the cord.
3) While playing back a test 6.3kHz tape (VTT-651) for azimuth adjustment, adjust screw (Fig. 11) so that the maximum output can be obtained.
4) If no test tape is available, play back a music cassette and adjust for maximum output and clarity in the high frequency range.
5) Be sure to lock the adjust screw with paint after adjustment.

2. Motor speed adjustment

1) Plug a cord into the earphone jack (EAR) and connect a 8Ω resistor in parallel with the cord.
2) Connect a frequency counter across the terminal of the cord.
3) While playing back a test 3kHz tape (VTT-656) for motor speed adjustment, adjust VR on the Electronic governor board (Fig. 13) so that the frequency counter indicates within 3000 to 3030Hz.

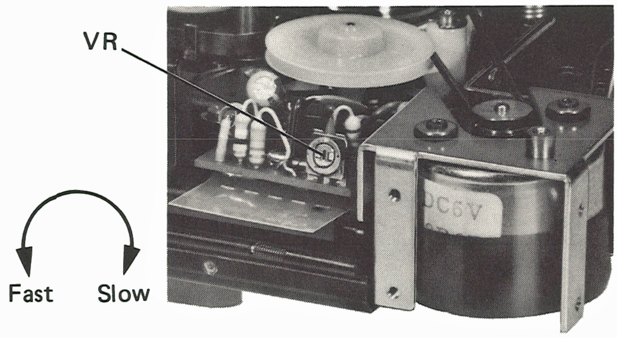


Fig. 13

3. Thrust of Flywheel

The clearance between the top of flywheel shaft and the flywheel holder should be within 0.05 to 0.2mm. If the clearance is beyond the limits, adjust the screw for normal value. Fig. 14

Note: After adjustment, fix the screw with lock adhesive.

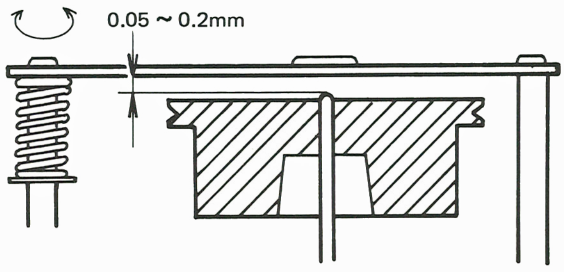


Fig. 14

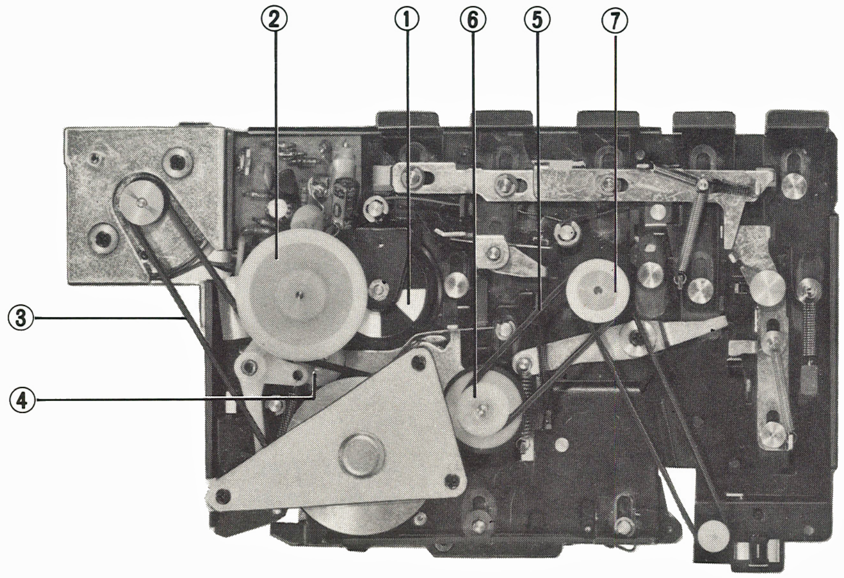


Fig. 15

Playback torque Fig. 15
Normal torque : 27 ~ 42 gr-cm
If this not obtainable,
1) Clean drive belt, take-up wheel, and clutch disk tire.
2) Replace clutch disk ass'y. ①
3)-Replace take-up wheel. ②
4) Replace drive belt. ③

Fast forwarding torque Fig. 15
Normal torque : 70gr-cm or more
If this is not obtainable,
1) Clean drive belt, idler and clutch disk tire.
2) Replace idler ass'y. ④
3) Replace clutch disk ass'y. ①
4) Replace drive belt. ③

Rewinding torque Fig. 15
Normal torque : 40gr-cm or more
If this is not obtainable,
1) Clean belt, idler and pulley.
2) Replace rewind belt. ⑤
3) Replace idler ass'y. ⑥
4) Replace pulley. ⑦

Tuner Alignment

Power Source :	DC 6V
Tone Control :	High
Output Measuring :	Speaker terminal (Impedance =8Ω), output level 50mW (0.63V/8Ω)
Input (SSG) :	Modulation 400Hz, Modulated to 30% (MW, LW) Modulation 1000Hz, Modulated to 30% (FM)

RF Alignment

Volume Control : Maximum

Step	Frequency Band	Input Signal		Place to be aligned	Set the V. Capacitor to
		Frequency	Given to		
1	MW	515kHz	Loop Antenna	L104	Maximum
2		1650kHz		C128a	Minimum
3		Repeat the Steps 1 & 2.			
4		600kHz	Loop Antenna	L107	600kHz Signal
5		1400kHz		C145	1400kHz Signal
6		Repeat the Steps 4 & 5, and adjust for no further improvement.			
7	LW	145kHz	Loop Antenna	L105	Maximum
8		360kHz		C128b	Minimum
9		Repeat the Steps 7 & 8.			
10		160kHz	Loop Antenna	L108	160kHz Signal
11		350kHz		C144	350kHz Signal
12		Repeat the Steps 10 & 11, and adjust for no further improvement.			
13	FM	87.5MHz	Rod Antenna	L102	Maximum
14		109MHz		C103a	Minimum
15		Repeat the Steps 13 & 14.			
16		90MHz	Rod Antenna	L101	90MHz Signal
17		106MHz		C103b	106MHz Signal
18		Repeat the Steps 16 & 17, and adjust for no further improvement.			

Parts Arrangement for Alignment

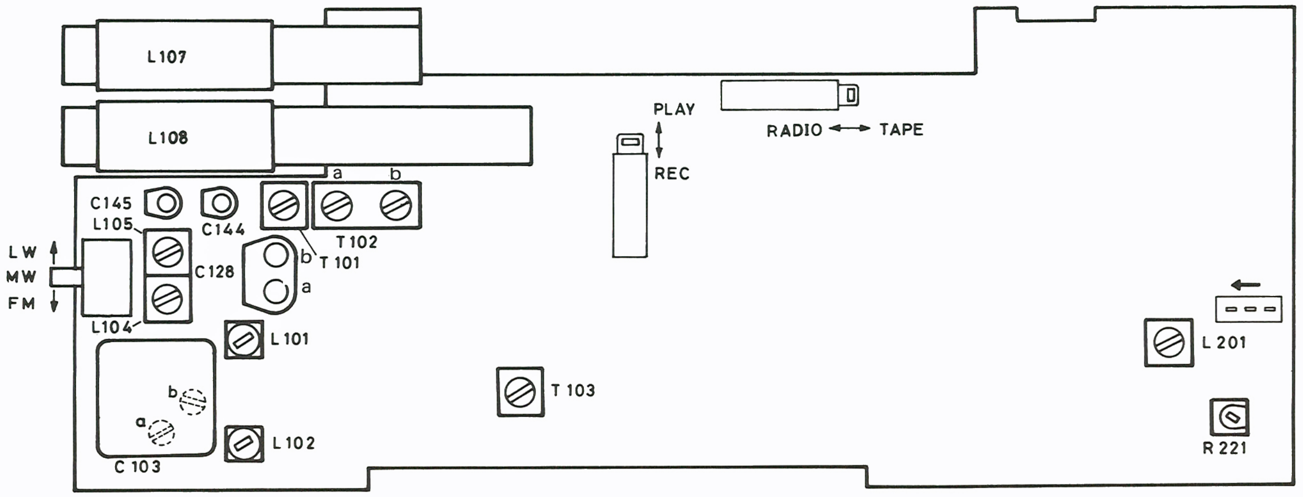

L107
L108
PLAY
REC
RADIO ←→ TAPE
a
b
C145
L105
C144
T102
b
T101
a
C128
LW
MW
FM
L104
L101
C103
L102
T103
L201
R221

Fig. 16

IF & Discriminator Alignment

Volume Control: Minimum
Set the V. Capacitor to: Minimum

	Input Signal		Place to be aligned	Output	Refer to
	Frequency	Given to			
MW	460kHz	Ant. (hot)	T102a, T102b	IC101 Pin ②	Fig. 17, 20-1
FM	10.7MHz	Bace of X102	T101	IC101 Pin ⑧	Fig. 18, 20-2
			T103	IC101 Pin ⑤	Fig. 19, 20-2

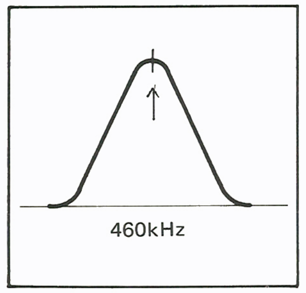


Fig. 17

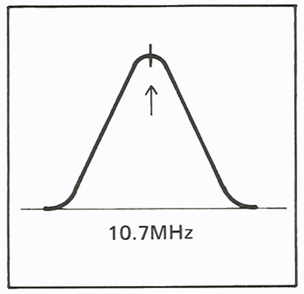


Fig. 18

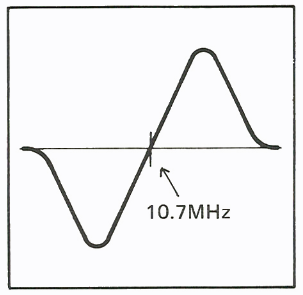


Fig. 19

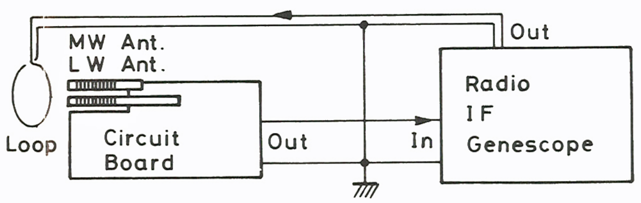

MW Ant.
LW Ant.
Out
Loop
Circuit Board
Out
In
Radio IF Genescope

Fig. 20-1

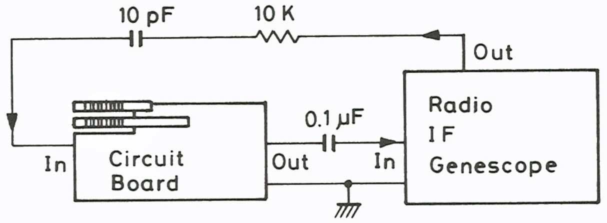

10 pF
10 K
Out
0.1 µF
In
Circuit Board
Out
In
Radio IF Genescope

Fig. 20-2

Adjusting Recording Bias

Set the Beat Cut switch to inside of circuit board.
Remove shield wire soldered to head.
Connect a resistor of 10Ω to terminal of head and shield wire.
Set the recorder in the recording mode.

Bias Frequency
Connect the frequency counter to the terminal of head and shield wire.
Adjust the L201 so that the frequency counter indicated 47 ± 1kHz.

Bias Current
Connect the Electronic Volt Meter (V.T.V.M) to the terminal of head and shield wire.
Adjust the R221 so that the Electronic Volt Meter (V.T.V.M) indicated 550μA (5.5mV/10Ω).

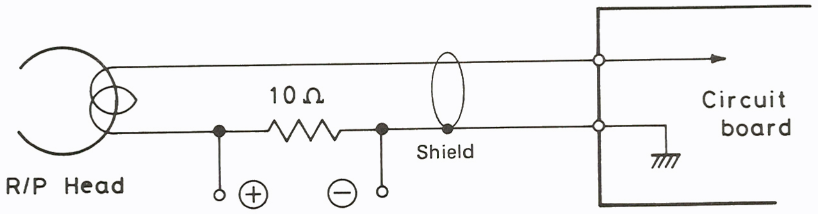

10 Ω
Shield
Circuit board
R/P Head
⊕
⊖

Fig. 21

How to Fit Tuning String

Turn the dial drum fully counterclockwise.
Fit the string in numerical order as shown below.

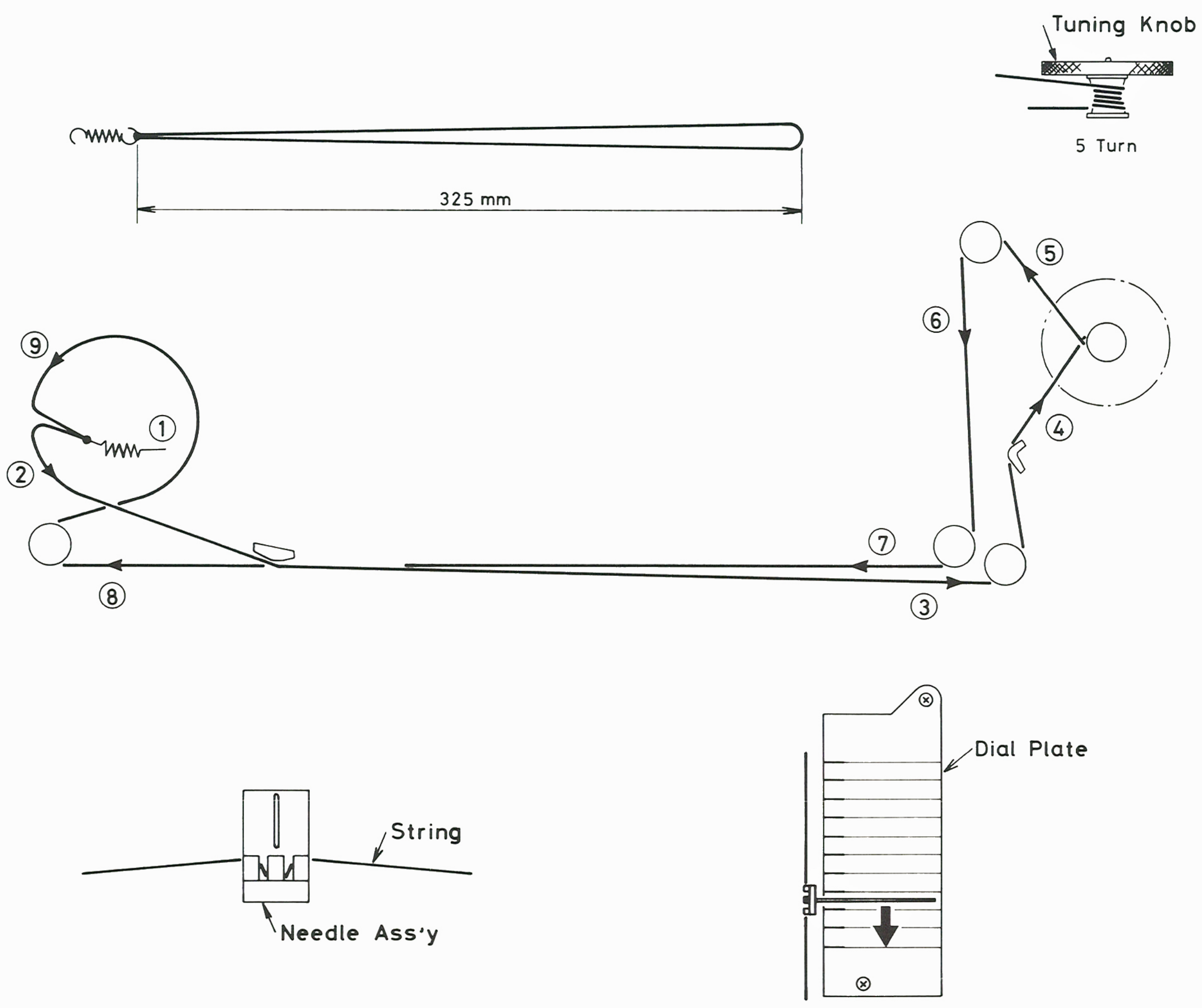

Tuning Knob
5 Turn
325 mm
①
②
③
④
⑤
⑥
⑦
⑧
⑨
Dial Plate
String
Needle Ass'y

Fig. 22

Cleaning and Lubrication

1. Cleaning

Wipe contamination off the head, capstan, pinch roller and other parts which come in contact with the tape. Dust on the head results in poor sound and ineffective erasing. Use a cloth soaked in alcohol, benzine, trichloroethylene, etc.
Be careful of handling these chemicals as they damage the cabinet.

2. Lubrication

Feed one or two drops of DTE oil or equivalent machine oil to the rewind roller shaft and pinch roller shaft once or twice an year on a normal use basis. Too much oil results in unsmooth rotation.

3. Remarks

Be careful not to apply oil to the rubber or rotating parts of belt, and pinch roller. Wipe off oil with a cloth soaked in alcohol to remove oil etc.

Block Diagram

Play back & Reception Mode

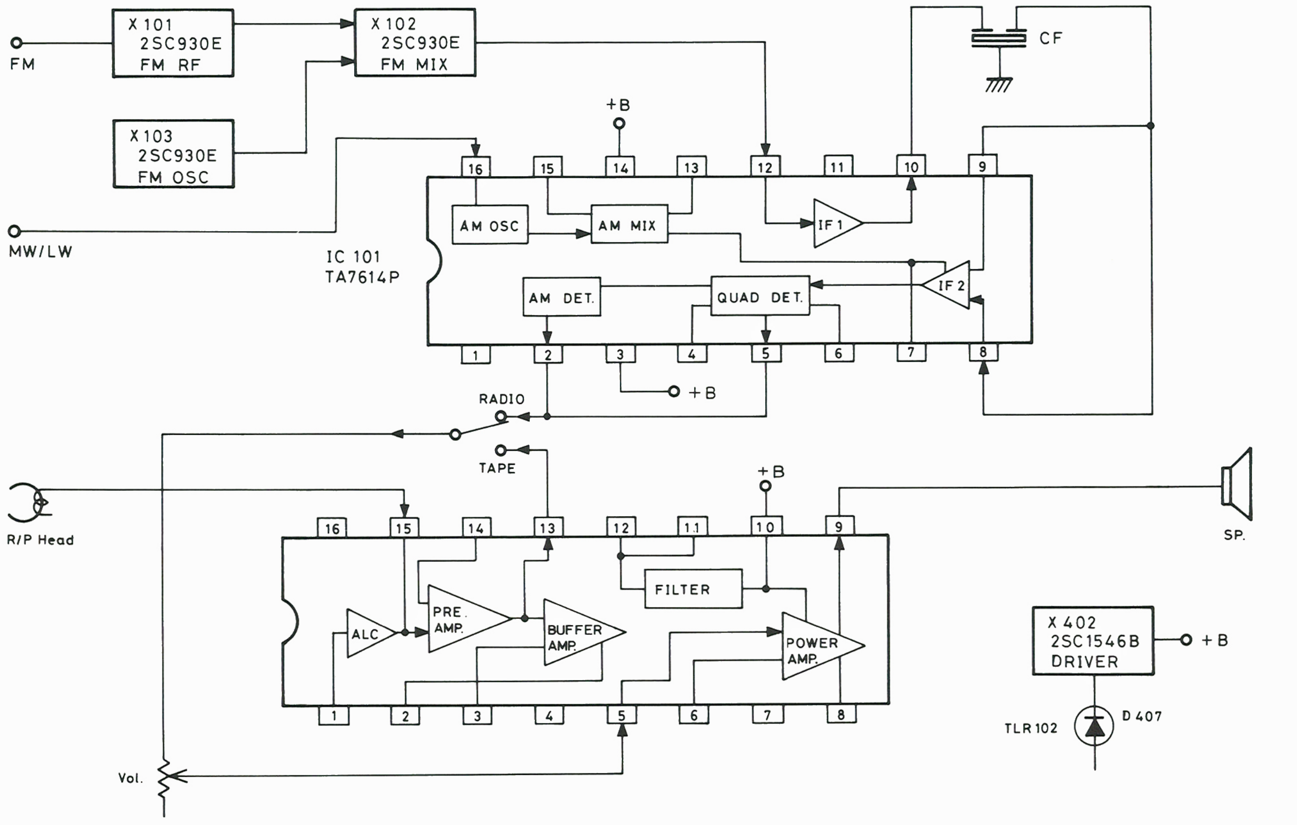

FM
X 101 2SC930E FM RF
X 102 2SC930E FM MIX
X 103 2SC930E FM OSC
CF
+B
MW/LW
IC 101 TA7614P
AM OSC
AM MIX
IF 1
AM DET.
QUAD DET.
IF 2
RADIO
+B
TAPE
R/P Head
+B
SP.
ALC
PRE. AMP.
BUFFER AMP.
FILTER
POWER AMP.
X 402 2SC1546B DRIVER
+B
TLR 102
D 407
Vol.

Fig. 23

Recording Mode

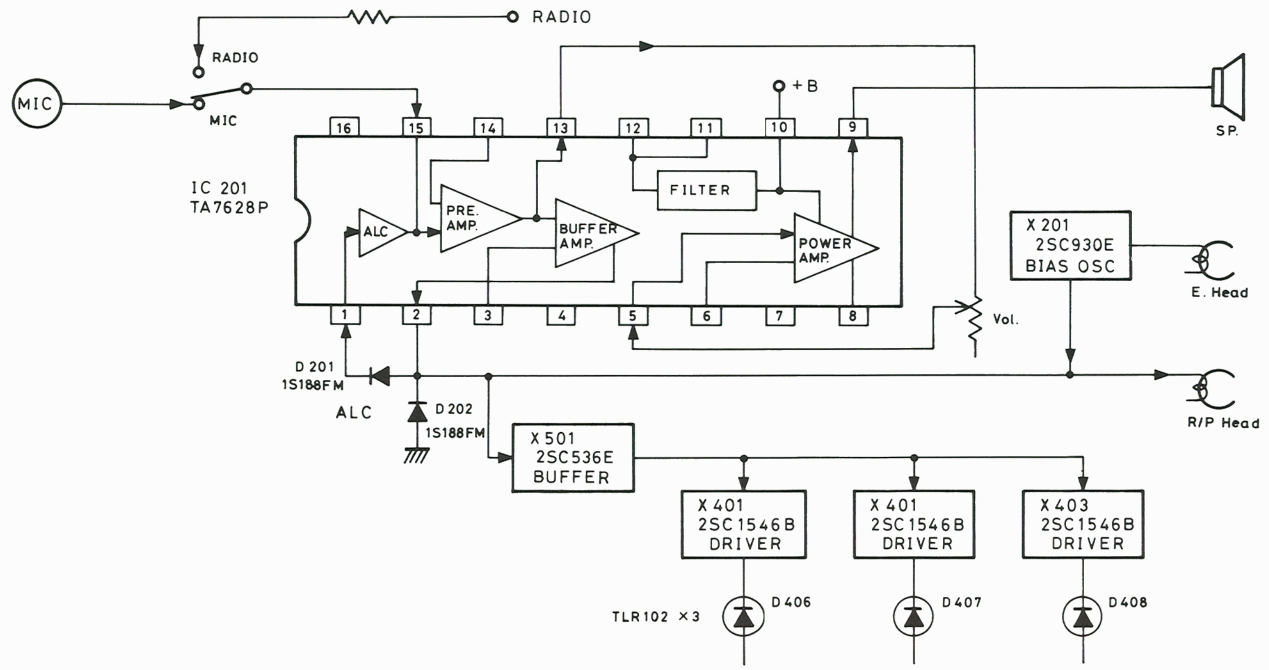
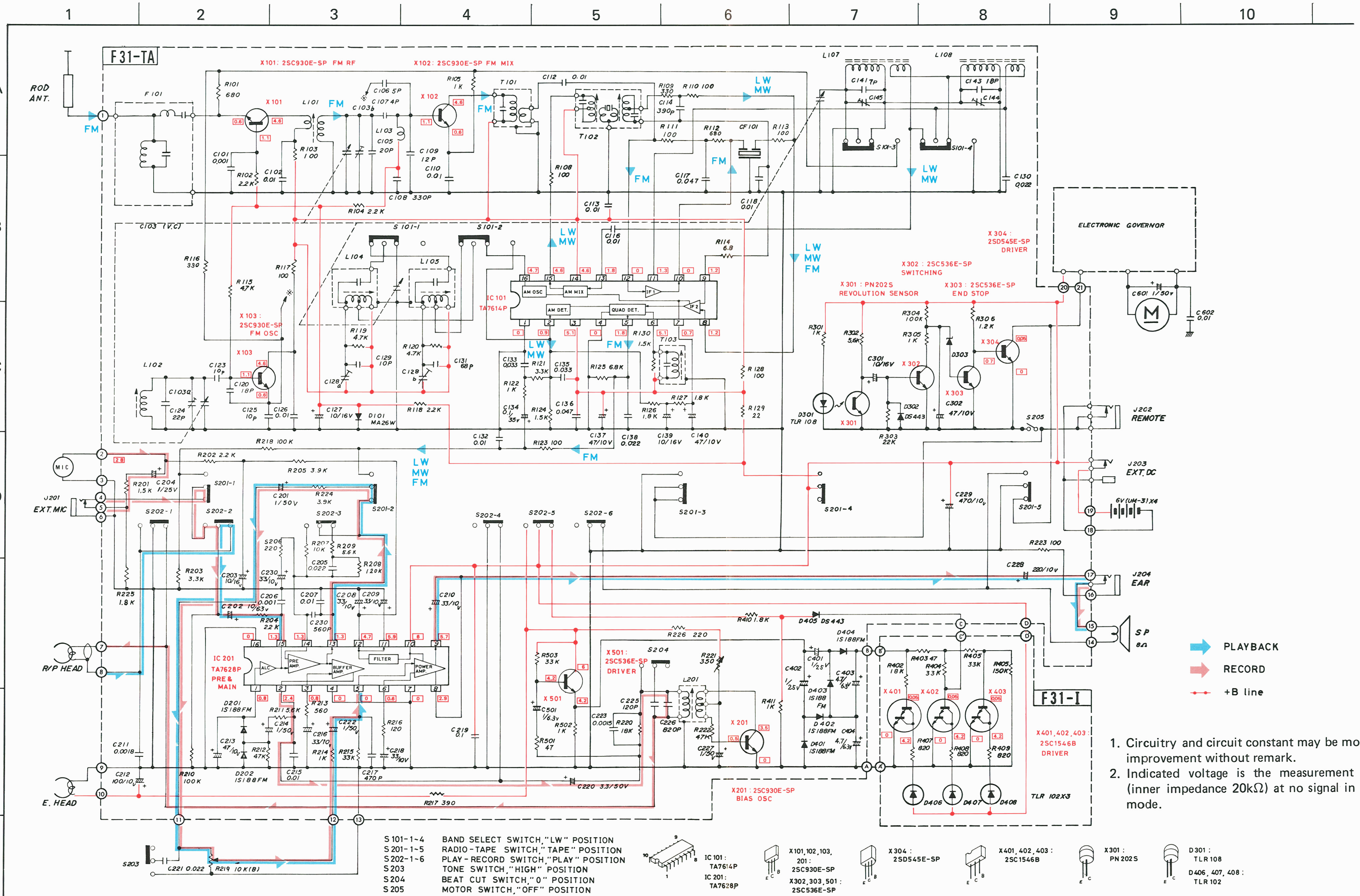

RADIO
RADIO
MIC
MIC
+B
SP.
IC 201 TA7628P
ALC
PRE. AMP.
BUFFER AMP.
FILTER
POWER AMP.
X 201 2SC930E BIAS OSC
E. Head
Vol.
D 201 1S188FM
ALC
D 202 1S188FM
R/P Head
X 501 2SC536E BUFFER
X 401 2SC1546B DRIVER
X 401 2SC1546B DRIVER
X 403 2SC1546B DRIVER
TLR102 ×3
D 406
D 407
D 408

Fig. 24

Schematic Diagram


F31-TA
ROD ANT.
FM
X101: 2SC930E-SP FM RF
X102: 2SC930E-SP FM MIX
T101
T102
L107
L108
LW MW
LW MW FM
S101-1
S101-2
S101-3
S101-4
L104
L105
X103 : 2SC930E-SP FM OSC
IC101 TA7614P
AM OSC
AM MIX
IF1
IF2
AM DET.
QUAD DET.
T103
ELECTRONIC GOVERNOR
X304 : 2SD545E-SP DRIVER
X302 : 2SC536E-SP SWITCHING
X301 : PN202S REVOLUTION SENSOR
X303 : 2SC536E-SP END STOP
D301 TLR108
S205
J202 REMOTE
J203 EXT. DC
6V (UM-3)×4
J204 EAR
SP 8Ω
MIC
J201 EXT. MIC
R/P HEAD
E. HEAD
S201-1
S201-2
S201-3
S201-4
S201-5
S202-1
S202-2
S202-3
S202-4
S202-5
S202-6
S203
S204
S206
IC 201 TA7628P PRE & MAIN
ALC
PRE AMP
BUFFER AMP
FILTER
POWER AMP
X501 : 2SC536E-SP DRIVER
X201 : 2SC930E-SP BIAS OSC
L201
F31-I
X401,402,403 : 2SC1546B DRIVER
D406
D407
D408
TLR 102×3
IC101 : TA7614P
IC201 : TA7628P
X101,102,103, 201 : 2SC930E-SP
X302,303,501 : 2SC536E-SP
X304 : 2SD545E-SP
X401,402,403 : 2SC1546B
X301 : PN202S
D301 : TLR108
D406, 407, 408 : TLR102

S101-1~4	BAND SELECT SWITCH, "LW" POSITION
S201-1~5	RADIO-TAPE SWITCH, "TAPE" POSITION
S202-1~6	PLAY-RECORD SWITCH, "PLAY" POSITION
S203	TONE SWITCH, "HIGH" POSITION
S204	BEAT CUT SWITCH, "0" POSITION
S205	MOTOR SWITCH, "OFF" POSITION

➡ PLAYBACK

➡ RECORD

-•- +B line

1. Circuitry and circuit constant may be modified for improvement without remark.
2. Indicated voltage is the measurement of tester (inner impedance 20kΩ) at no signal in recording mode.

Fig. 25

Wiring

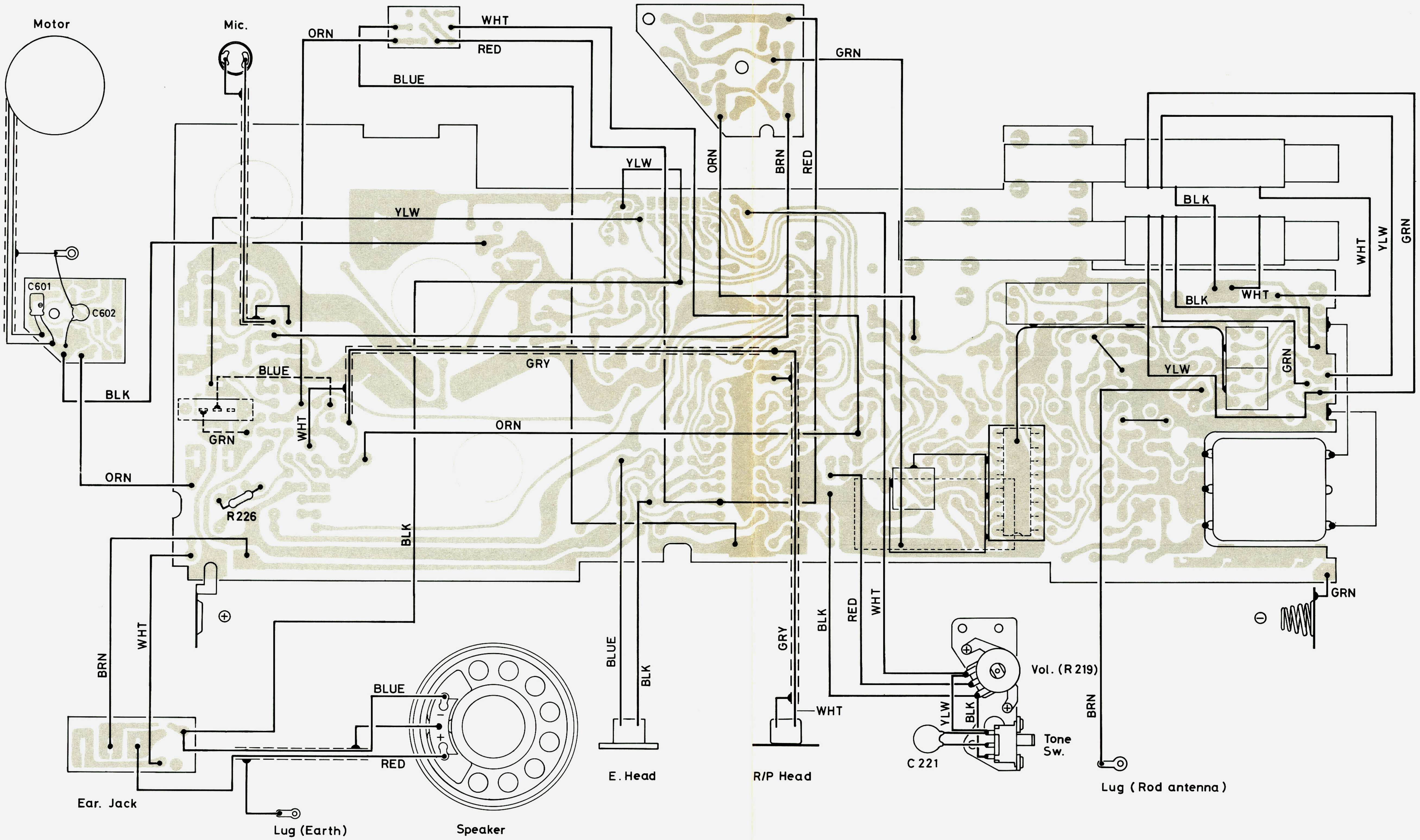

Motor
Mic.
ORN
WHT
RED
BLUE
GRN
C601
C602
YLW
ORN
BRN
RED
BLK
WHT
YLW
GRN
BLK
WHT
BLUE
GRY
GRN
WHT
ORN
GRN
YLW
ORN
R226
BLK
BRN
WHT
BLUE
RED
BLUE
BLK
GRY
WHT
BLK
RED
WHT
YLW
BLK
Vol. (R 219)
BRN
Tone Sw.
C 221
GRN
Ear. Jack
Lug (Earth)
Speaker
E. Head
R/P Head
Lug (Rod antenna)

Fig. 26

Wiring

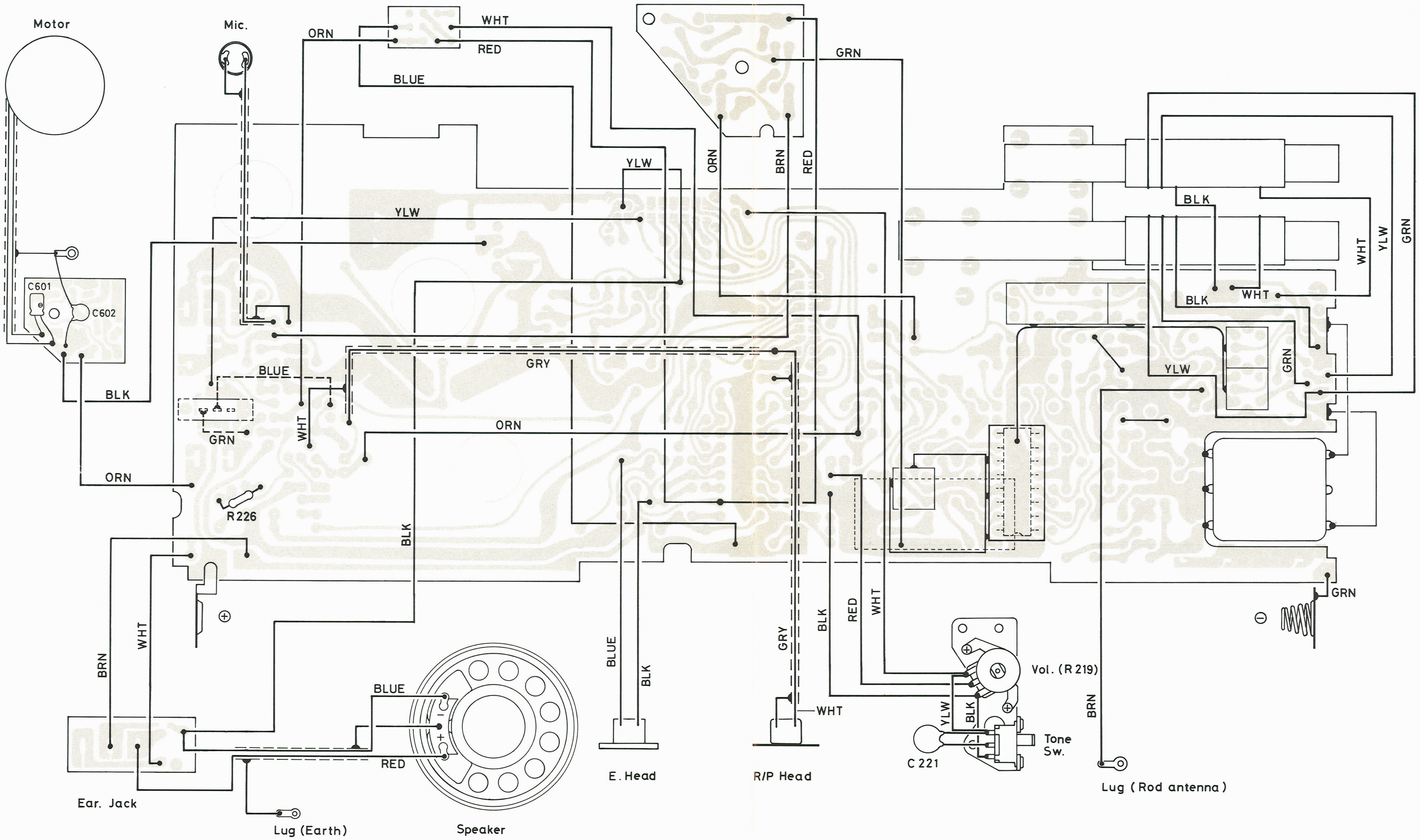
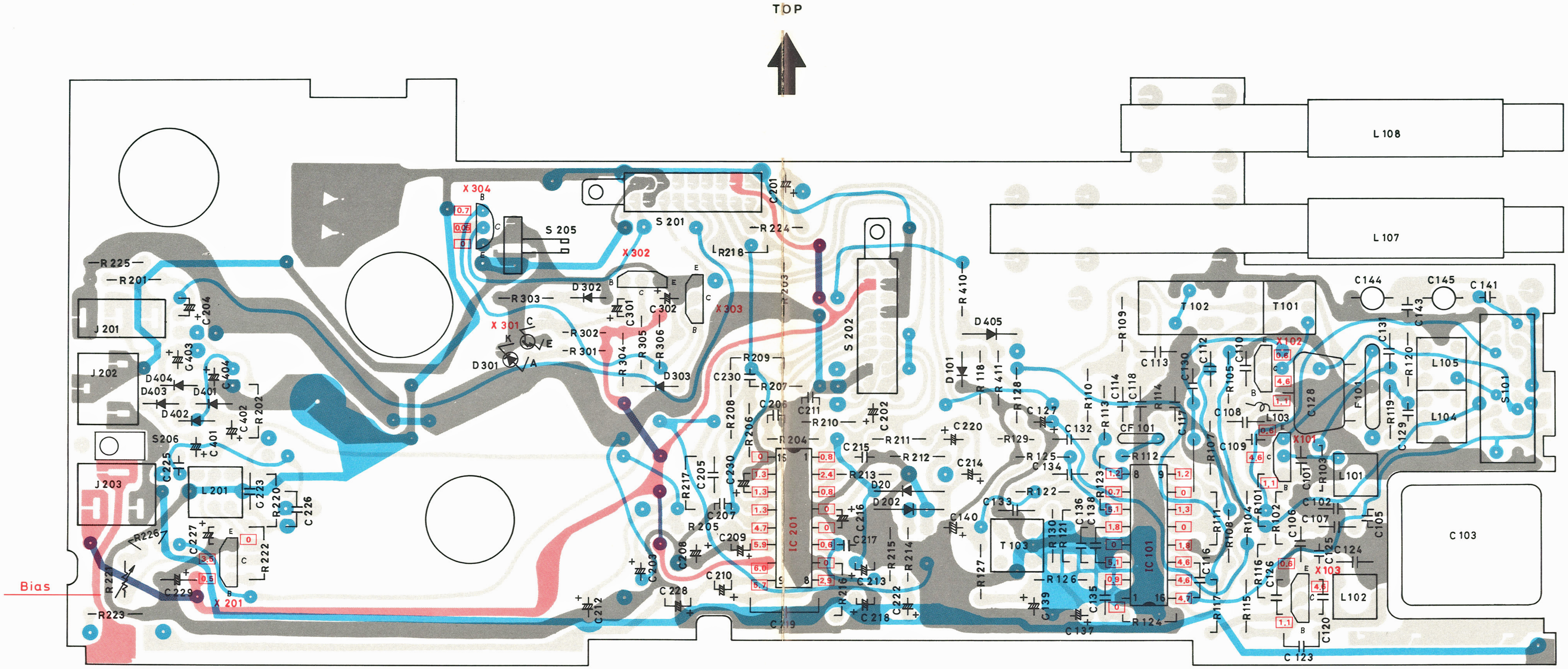

Motor
Mic.
ORN
WHT
RED
BLUE
GRN
YLW
ORN
BRN
RED
C601
C602
BLK
BLUE
GRN
WHT
GRY
ORN
ORN
R226
BLK
BLK
WHT
YLW
GRN
BLK
WHT
YLW
GRN
BRN
WHT
BLUE
RED
BLUE
BLK
GRY
WHT
BLK
RED
WHT
GRN
Vol. (R 219)
YLW
BLK
Tone Sw.
C 221
BRN
Ear. Jack
Lug (Earth)
Speaker
E. Head
R/P Head
Lug (Rod antenna)

Fig. 26

Circuit Board Parts


TOP
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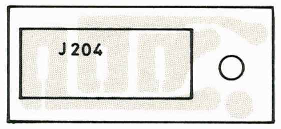
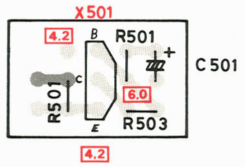
J 202
J 203
S206
R 225
R 201
C 204
C 403
C 404
D404
D403
D401
D402
C 401
C 402
R 202
C 225
L 201
C 223
R 220
C 226
R226
C227
R 222
C 229
R 221
R 223
X 201
X 304
S 205
S 201
X 302
R 303
D 302
C 301
C 302
X 303
X 301
D 301
R 302
R 301
R 304
R 305
R 306
D 303
C 201
R 224
R218
R 203
S 202
R 410
D 405
C 230
R209
R207
R 208
C 206
R 206
C 211
R210
C 202
R 204
R 211
R 212
C 220
C 215
R 213
C 214
D201
D 202
C 205
R 217
C 207
R 205
C 209
C 210
C 228
C 203
C 208
C 212
C 219
IC 201
C 216
C 217
C 213
C 218
R 216
R 215
R 214
C 222
C 140
D 101
R 118
R 411
R 128
C 127
R 129
R 125
C 134
R 122
C 133
C 132
T 103
R 127
R 126
C 139
C 135
C 137
C 136
C 138
R 130
R 121
R 109
C 113
R 110
C 114
C 118
R 113
CF 101
R 114
R 123
R 112
IC 101
R 124
T 102
T101
C 130
C 112
C 111
C 110
R 105
X 102
C 108
L 103
C 109
R 107
X 101
R 103
C 101
L 101
R 101
R 102
R 104
R 108
R 111
C 116
R 117
R 115
R 116
C 126
C 106
C 107
C 102
C 125
C 124
X 103
C 120
C 123
L102
C 104
C 105
C 128
F 101
C 131
R 120
R 119
C 129
C 144
C 145
C 141
C 143
L 105
L 104
S 101
C 103
L 108
L 107

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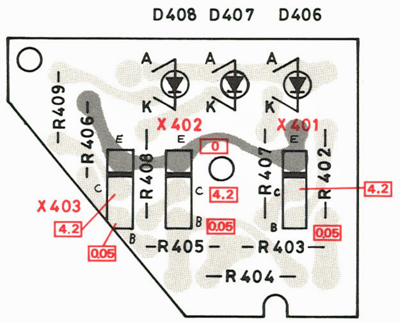
4.2
B
R501
C 501
R501
C
6.0
E
R503
4.2


D408 D407 D406
A A A
K K K
R409
R406
X 402
X 401
X 403
4.2
0.06
R408
R407
R 402
4.2
0
0.06
0.05
R405
R403
R404
4.2

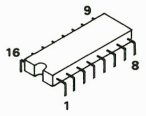
🟥 Positive line

▨ Common line

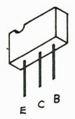
🟦 Circuit pattern of parts side.

■ Positive line of parts side

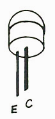
Indicated voltage is the measurement of tester (inner impedance $20k\Omega$) at no signal in recording mode.



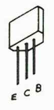
IC 101 :
TA7614 P
IC 201 :
TA7628 P



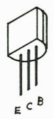
X401, 402, 403 :
2SC1546B



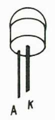
X301 :
PN202S



X101, 102, 103, 201 :
2SC930E-SP
X202, 302, 303 :
2SC536E-SP



X304 :
2SD545E-SP



D301 :
TLR 108
D406, 407, 408
TLR 102

Fig. 27

Parts list of circuit board

Transistor

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Remarks	Pc	fT	Q'ty
X101,102,103,201	*2SC930E-SP		0.12W	300MHz	4
X301	PN202S	Photo Transistor	—	—	1
X302,303,501	*2SC536E-SP		0.2W	100MHz	3
X304	*2SD545E-NP		0.6W	180MHz	1
X401,402,403	2SC1546B		0.3W	250MHz	3

IC & Diodes

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
IC101	*TA7614P	IC		1
IC201	*TA7628P	〃		1
D101	MA26W	Diode		1
D201,202,401,402, 403,404	1S188FM	〃		6
D301	TLR108	LED		1
D302,405	DS443	Diode		2
D303	RD2.4EB	Zener Diode		1
D406,407,408	TLR102	LED		3

I.F.T. & Coil

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
T101	*F00326-02	I.F.T.	MW CF	1
T102	* 〃 -04	〃	FM 1ST	1
T103	* 〃 -03	〃	FM DET	1
L101	*F00327-01	RF Coil	FM RF	1
L102	* 〃 -02	〃	FM O.S.C.	1
L103	*F00330-03	Coil	IF Trap	1
L104	*F00328-01	O.S.C. Coil	MW	1
L105	* 〃 -02	〃	LW	1
L107	*F00329-01	Bar Ant. Coil	MW	1
L108	* 〃 -02	〃	LW	1
L201	*F28317-02	O.S.C. Coil	Bias	1

Capacitors

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Remarks		Q'ty
C101,110	QCF11HP-102	Ceramic	1000pF	50V	2
C102,111,112,113, 116,118,126	QCF11HP-103	〃	0.01μF	〃	7
C103	*QAP1224-514	Variable			1
C105	QCS11HJ-200	Ceramic	20pF	50V	1
C106	〃 -4R0	〃	4pF	〃	1
C107	〃 -5R0	〃	5pF	〃	1
C108	*QCY41HK-331	〃	330pF	〃	1
C109	QCS11HJ-120	〃	12pF	〃	1
C114	*QCY41HK-391	〃	390pF	〃	1
C117,136	QCF11HP-473	〃	0.047μF	〃	2
C120	QCT05CH-180	〃	18pF	〃	1
C123,125	〃 -100	〃	10pF	〃	2

Ref. No.	Parts No.	Parts Name	Remarks		Q'ty
C124	*QCT05CH-220	Ceramic	22pF	50V	1
C127,139	*QET41CR-106M	Electrolytic	10µF	16V	2
C128	*QAT2002-002	Trimmer		〃	1
C129	QCS11HJ-100	Ceramic	10pF	50V	1
C130	QCF11HP-223	〃	0.022µF	〃	1
C131	QCS11HJ-680	〃	68pF	〃	1
C132	*QCZ0109-103	〃	0.01µF	〃	1
C133,135	〃 -333	〃	0.033µF	〃	1
C134	QEE41VM-104	Tantal	0.1µF	35V	1
C137	*QET41AR-107M	Electrolytic	100µF	10V	1
C138	QFM41HK-223	Mylar	0.022µF	50V	1
C140	*QET41AR-476M	Electrolytic	47µF	10V	1
C141	QCS11HJ-7R0	Ceramic	7pF	50V	1
C143	〃 -180	〃	18pF	〃	1
C144,145	*QAT3001-015	Trimmer			2
C201,214,222,227	*QET41HR-105M	Electrolytic	1µF	50V	4
C202	*QEE40JM-106B	Tantal	10µF	6.3V	1
C203	*QET41CR-106M	Electrolytic	10µF	16V	1
C204	*QEE41EM-105M	Tantal	1µF	25V	1
C205,221	*QCZ0109-223	Ceramic	0.022µF	50V	2
C206	*QCZ0109-102	〃	0.001µF	〃	1
C207,215	* 〃 -103	〃	0.01µF	〃	2
C208,209,210,216, 218,230	*QET41AR-336M	Electrolytic	33µF	10V	6
C212	* 〃 -107M	〃	100µF	〃	1
C213	* 〃 -476M	〃	47µF	〃	1
C219	*QCZ0109-104M	Ceramic	0.1µF	50V	1
C220	*QET41HR-335M	Electrolytic	3.3µF	〃	1
C225	QCS11HJ-121	〃	120pF	〃	1
C226	*QCY41HK-821	〃	820pF	50V	1
C228	*QET41AR-227M	〃	220µF	10V	1
C229	* 〃 -477M	〃	470µF	〃	1
C230	*QCY41HK-561	Ceramic	560pF	50V	1
C301	*QET41CR-106M	Electrolytic	10µF	16V	1
C302	*QET41AR-476M	〃	47µF	10V	1
C401,402	*QEE41EM-105B	〃	1µF	25V	2
C403,404	*QEE41EM-475B	〃	4.7µF	6.3V	2
C501	QEE41EM-105	Tantal	1µF	25V	1

Resistors

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
R101,105,116	QRD181J-681B	Carbon	680Ω 1/8W	3
R102,104,118	〃 -222B	〃	2.2kΩ 〃	3
R103,108,117, 123,128,129	〃 -101B	〃	100Ω 〃	6
R109,111,112	〃 -331B	〃	330Ω 〃	3
R110	〃 -151B	〃	150Ω 〃	1
R113	〃 -181B	〃	180Ω 〃	1
R114	〃 -6R8B	〃	6.8Ω 〃	1
R115,119,120	〃 -472B	〃	4.7kΩ 〃	3
R121	〃 -332B	〃	3.3kΩ 〃	1
R122	〃 -102B	〃	1kΩ 〃	1
R124	〃 -152B	〃	1.5kΩ 〃	1
R125	〃 -682B	〃	6.8kΩ 〃	1
R126,127	〃 -182B	〃	1.8kΩ 〃	2
R130	〃 -153B	〃	15kΩ 〃	1
R201	〃 -152B	〃	1.5kΩ 〃	1
R202,204	〃 -222B	〃	2.2kΩ 〃	2
R203	〃 -332B	〃	3.3kΩ 〃	1
R205	〃 -392B	〃	3.9kΩ 〃	1
R206,226	〃 -221B	〃	220Ω 〃	2
R207	〃 -103B	〃	10kΩ 〃	1
R208	〃 -124B	〃	120kΩ 〃	1
R209,211	〃 -562B	〃	5.6kΩ 〃	2
R210,218	〃 -104B	〃	100kΩ 〃	2
R212,222	〃 -473B	〃	47kΩ 〃	2
R213	〃 -561B	〃	560Ω 〃	1
R214	〃 -102B	〃	1kΩ 〃	2
R215	〃 -333B	〃	33kΩ 〃	1
R216	〃 -121B	〃	120Ω 〃	1
R217	〃 -391B	〃	390Ω 〃	1
R219	*QVZ3007-002	Variable	10kΩ (B)	1
R220	QRD181J-183B	Carbon	18kΩ 1/8W	1
R221	*QVZ3235-351	Variable	350Ω	1
R223	QRD181J-101B	Carbon	100Ω 1/8W	1
R224	〃 -392B	〃	3.9kΩ 〃	1
R225	〃 -182B	〃	1.8kΩ 〃	1
R301,305	〃 -102B	〃	1kΩ 〃	2
R302	〃 -562B	〃	5.6kΩ 〃	1
R303	〃 -223B	〃	22kΩ 〃	1
R304	〃 -104B	〃	100kΩ 〃	1
R306	〃 -122B	〃	1.2kΩ 〃	1
R402	〃 -183B	〃	18kΩ 〃	1
R403	〃 -473	〃	47kΩ 〃	1
R404,405	〃 -333B	〃	33kΩ 〃	2
R406	〃 -154	〃	150kΩ 〃	1
R407,408,409	〃 -821	〃	820Ω 〃	3
R410	〃 -182	〃	1.8kΩ 〃	1
R411	〃 -102	〃	1kΩ 〃	1
R501	〃 -470B	〃	47Ω 〃	1
R502	〃 -102B	〃	1kΩ 〃	1
R503	〃 -333B	〃	33kΩ 〃	1

Others

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
F101	*F31316-01	Print Filter		1
CF101	*SFE10.7MS3	Ceramic Filter		1
S101	*QSS4301-032	Slide Switch	Band	1
S201,202	QSS0040-002	〃		2
S203,204	*QSS0041-001	〃		2
S205	F28307-01	Leaf Switch		1
J201,204	QMS3501-015	Jack	Mic, Ear	2
J202	QMS2501-101	〃	Remote	1
J203	*QMA0621-005	〃	EXT. DC	1
	*F31300-01	Var. Cap. Bracket	Var. Cap.	1
	SPSK2003M	Screw	Var. Cap. Bracket	2
	*SSSK2604M	Screw	M2.6	2
	*F31497-01	Ant. Holder		1
	SPSK1402M	Screw	Beat Cut	2
	*F31537-01	Shield Cover		1
	*F31538-01	〃		1
	*F31539-01	〃		1

Mechanical Components

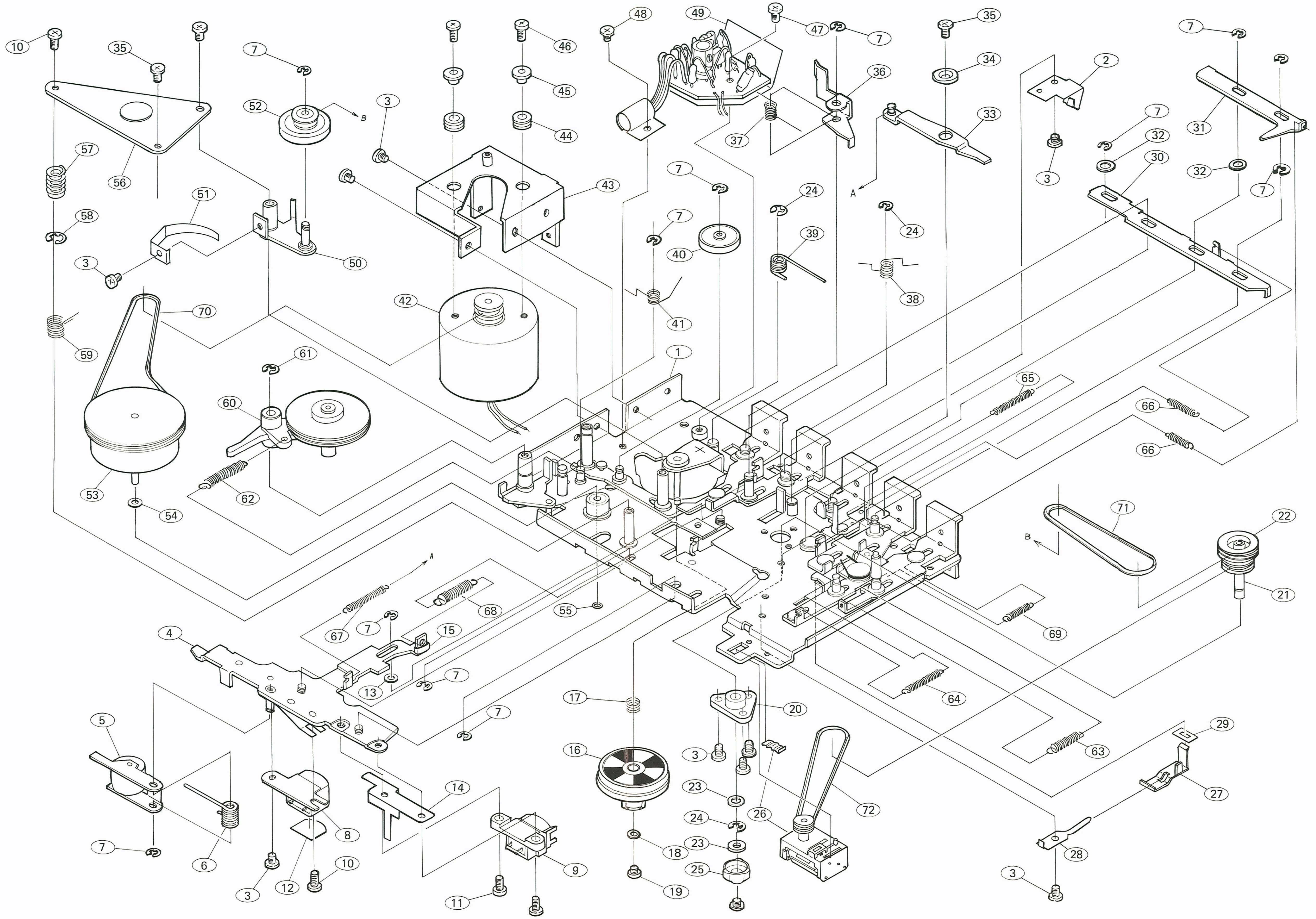

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Fig. 28

Parts list of mechanical components

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
1	*F31103-0A	Chassis Base Ass'y		1 set
2	*F31468-01	Cassette Spring		1
3	SPSK2002M	Screw		9
4	*F31303-0A	Head Base Ass'y		1 set
5	F28442-0B	P.R. Arm Ass'y		1 set
6	*F31452-01	P.R. Arm Spring		1
7	REE1500X	E. Washer		11
8	*F00331-01	R/P Head		1
9	*F00332-01	Erase Head		1
10	SPSK2005N	Screw		2
11	SPSK2004M	Screw		2
12	*F31535-01	Sheet		1
13	Q03093-834	Washer		1
14	*F31451-01	Wire Clamp		1
15	*QXTV30H-003	Vinyl Tube		1
16	F28448-0B	Clutch Disk Ass'y		1 set
17	*F00302-24	Compression Spring		1
18	Q03093-838	Washer		1
19	F28457-01	Disk Screw		2
20	F28458-01	Disk Stand		1
21	F28459-01	Disk Shaft		1
22	*F31459-01	Supply Pulley		1
23	Q03093-825	Washer		2
24	REE2000X	E. Washer		3
25	F28580-01	Reel Feather		1
26	*F31305-01	Tape Counter		1
27	*F31478-01	Kick Lever		1
28	*F31479-01	Kick Lever Spring		1
29	*F31533-01	Square Washer		1
30	*F31474-01	Lock Plate		1
31	*F31475-01	Rew Slide Plate		1
32	Q03093-827	Washer		2
33	*F31509-0A	Play Arm Ass'y		1 set
34	*F31477-01	Collar		1
35	SSSK2003M	Screw		1
36	*F31471-01	SW. Arm		1
37	*F31531-01	Tortion Spring		1
38	*F31472-01	Tortion Spring		1
39	*F31473-01	Tortion Spring		1
40	F28481-0A	FF Idler Ass'y		1 set
41	F28588-01	FF Idler Spring		1
42	*MDE-3R6AN	Motor Ass'y	with Governor, pulley	1 set
43	*F31507-0A	Motor Bracket Ass'y		1
44	F26449-01	Motor Cushion		2
45	F00400-09	Metal		2
46	SPSK2045M	Screw		2
47	SPSK2004M	Screw		1
48	SPSK2016N	Screw		1
49	*F31526-01	Insulator		1
50	*F31460-0A	Rewind Arm Ass'y		1 set
51	*F31464-01	Rew Spring		1
52	*F31465-0A	Rewind Idler Ass'y		1 set
53	*F31467-0A	Fly Wheel Ass'y		1
54	Q03093-830	Washer		1
55	F28594-01	Capstan Ring		1
56	*F31469-0A	Holder Ass'y		1 set
57	*F00302-22	Compression Spring		1
58	REE3000X	E. Ring		1
59	*F31453-01	Take-up Plate Spring		1
60	*F31454-0A	Take-up Arm Ass'y		1 set
61	REE2500X	E. Ring		1
62	*F00301-25	Tension Spring		1
63	*F00301-26	Tension Spring		1
64	*F00301-27	Tension Spring		1
65	*F00301-28	Tension Spring		1
66	*F00301-29	Tension Spring		2
67	*F00301-31	Tension Spring		1
68	*F00301-32	Tension Spring		1
69	*F00301-34	Tension Spring		1
70	*F00304-18	Belt	Capstan	1
71	*F00304-19	Belt	Rewind	1
72	*F00304-20	Belt	Counter	1
	*QET41HR-105M	E. Capacitor		1
	QCF11HP-103	C. Capacitor		1
	*F00414-01	Lug		1

Total Assembly

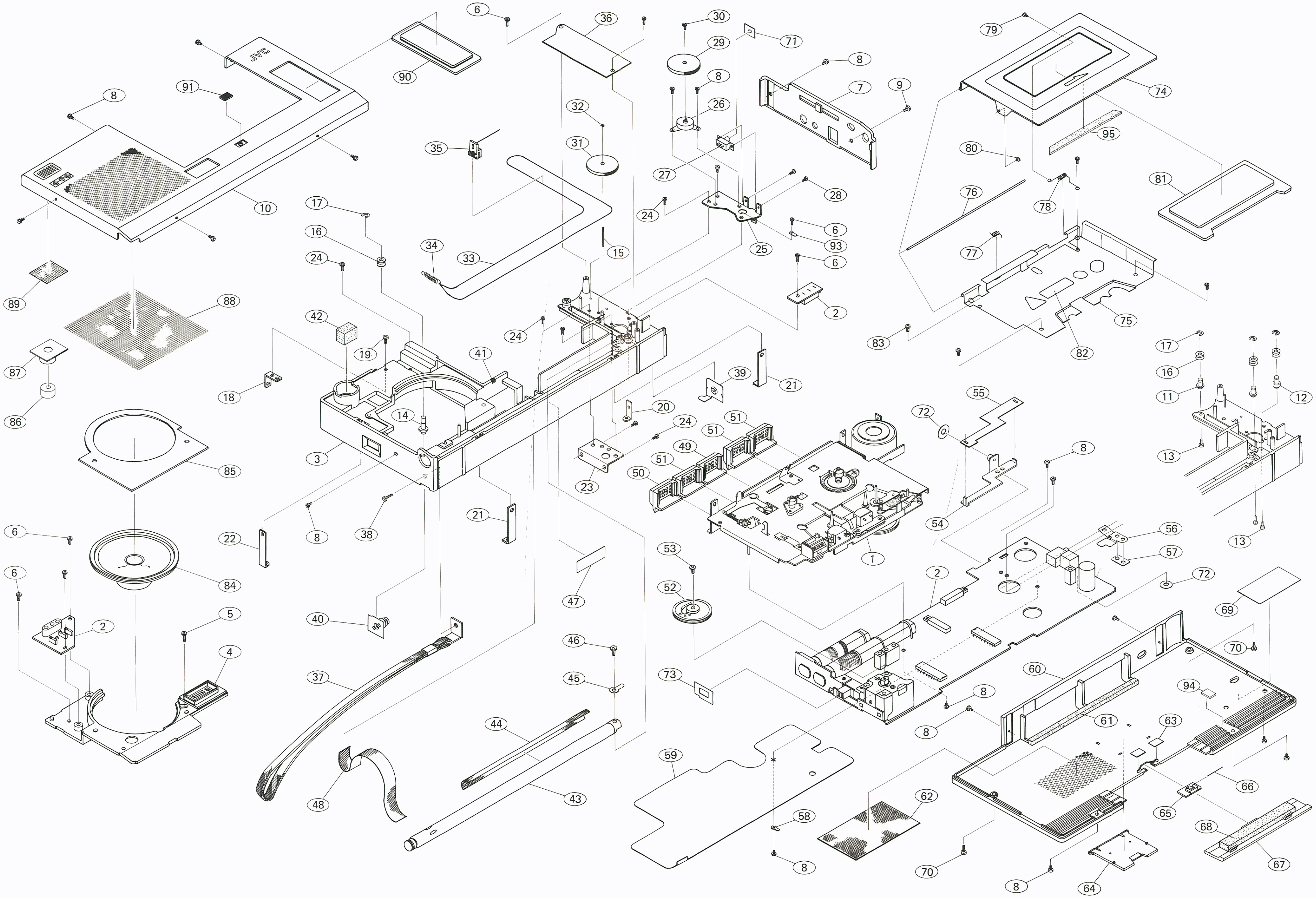
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Fig. 29

Parts list of total assembly

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
1	*F31M	Mecha. Ass'y		1 set
2	*F31A	Amp. Ass'y		1 set
3	*F31100-01	Mould Chassis		1
4	*F31201-01	Inner Cover		1
5	SPSP2010Z	Screw		1
6	F00410-25N	Screw		10
7	*F31301-01	Side Cover		1
8	SPSK2003M	Screw		18
9	SPSK2004M	Screw		1
10	*F31101-01	Top Panel		1
11	*F31524-01	Stud		2
12	*F31524-02	Stud		1
13	*F00413-02	Screw		3
14	*F31545-01	Stud		1
15	*F31513-01	Tuning Shaft		1
16	*V40409-1	Roller		4
17	REE2500X	E. Ring		4
18	*F31402-01	Front Bracket		1
19	SPSK2004M	Screw		1
20	*F31540-01	Bracket		1
21	*F31403-01	Rear Bracket		2
22	*F31404-01	Side Bracket		1
23	*F31401-01	Bracket		1
24	SPSK2004M	Screw		6
25	*F31400-01	Bracket		1
26	*QVZ3007-002	V. Resistor	Vol.	1
27	*QSS0040-001	Slide Switch	Tone	1
28	SPSK1402M	Screw		2
29	*F31407-02	Volume Knob		1
30	SPSK1703M	Screw		1
31	*F31406-0B	Tuning Knob Ass'y		1
32	REE1000	E. Ring		1
33	*F00416-02	Tuning String		1
34	*F31541-01	Spring		1
35	*F31510-0A	Needle Ass'y		1 set
36	*F31410-03	Dial Plate		1
37	*F31504-0A	Hand Strap Ass'y		1 set
38	*SDSP2604M	Screw		1
39	*F31413-01	Terminal		1
40	*F31511-0A	Terminal Ass'y		1 set
41	*F31544-01	Spacer		2
42	*F00303-26	Spacer		1
43	*QZR4176-002	Rod Antenna		1
44		Hirament Tape		1
45	*F00414-02	Lug		1
46	SBSB2610Z	Screw		1
47	*53866-5	Serial Ticket		1
48	*F31485-01	Ribbon		1
49	*F31486-01	Push Button		1
50	*F31486-02	〃		1
51	*F31486-03	〃		3
52	*F31542-01	Dial Drum		1
53	SPSK2604M	Screw		1
54	*F31493-0B	Switch Lever		1
55	*F31515-01	Spacer		1
56	*F31528-01	Spring		1
57	*F31522-01	Bracket		1
58	*F00414-01	Lug		1

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
59	*F31319-01	Shield Plate		1
60	*F31102-01	Bottom Cover		1
61	*F00303-28	Spacer		1
62	*F31520-02	Bottom Net		1
63	*F00303-25	Spacer		2
64	*F31317-01	Stand		1
65	*F31318-01	Batt. Lid Lock Lever		1
66	*F31512-01	Spring		1
67	*F31302-01	Battery Lid		1
68	*F00303-32	Spacer		1
69	*F31308-01	Name Plate		1
70	SPSK2008M	Screw		2
71	F28559-01	Washer		1
72	*F00405-11	Washer		2
73	*F31530-01	Washer		1
74	*F28304-11	Cassette Lid		1
75	*F31202-01	Inner Lay		1
76	F28533-01	Hinge Shaft		1
77	*F31498-01	Spring		1
78	*F31499-01	Spring		1
79	*F31500-01	Pin		1
80	*F31556-01	Pin		1
81	F28567-01	Window		1
82	F28571-02	Mirror		1
83	SPSK2002M	Screw		4
84	*EAS-6P0IS	Speaker		1
85	*F31482-01	Rubber Sheet		1
86	F00314-02	Microphone		1
87	*F31521-01	Mic. Cover		1
88	*F31484-01	Speaker Net		1
89	*F31518-01	Mic. Net		1
90	*F31411-01	Dial Window		1
91	*F31488-01	Cover		1
92	*F00303-30	Spacer		2
93	*F00414-01	Lug		1
94	*F00303-30	Spacer		1
95	*F31546-01	Spacer		1

Packing

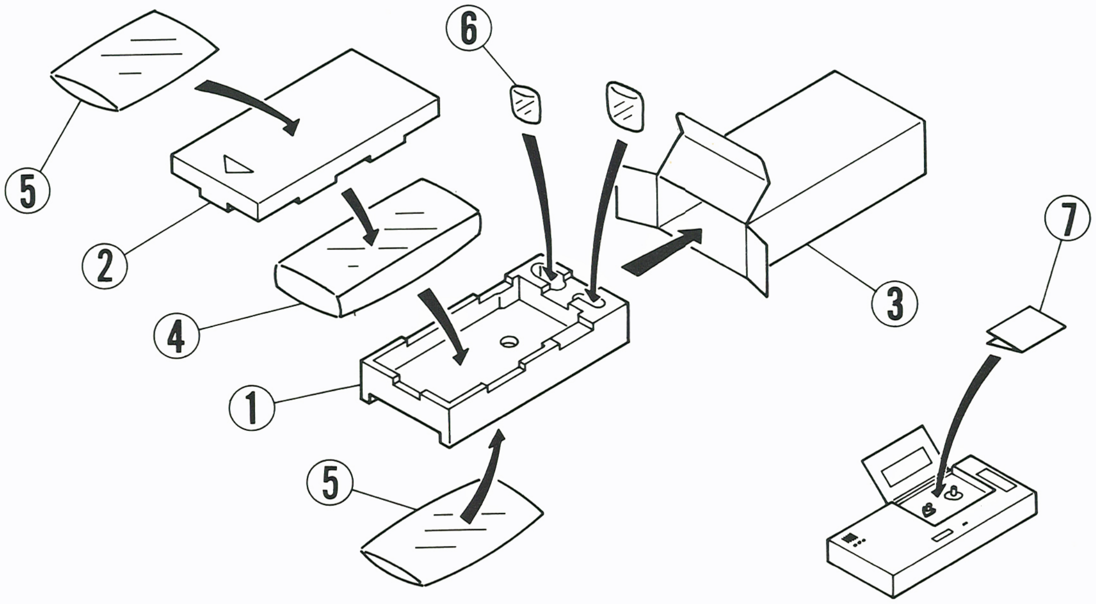

Fig. 30

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
1~3	*F31310-0A	Packing Case Ass'y		1 set
1	*F31106-01	Packing Case		1
2	*F31107-01	〃		1
3	*F31313-01	Packing Box		1
4	*QPGA015-03005	Poly Bag	for Set	1
5	QPGA012-02505	〃	for Inst. Book , Soft Case	2
6	QPGA007-01003	〃	for Earphone	1

Accessories

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Remarks	Q'ty
	*UM-3DJ	Battery		4
	*F31309-01	Soft Case		1
	QME1308-011	Earphone		1
	F27404-0B	Head Cleaning Ass'y		1 set
	*MR200L-IB-EFG	Instruction Book		1
7	*F00417-01	Precautions Card		1